

Office Action Summary

Application No.

10/773,982

Applicant(s)

TSUKAMOTO ET AL.

Examiner

Katrina Fujita

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 06/11/2007.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendments

1. This Office Action is responsive to the applicant's remarks received on June 11, 2007. Claims 1, 2, 4, 5, 8 remain pending.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The previous drawing objections are withdrawn in light of applicant's amendment.

Specification

4. The disclosure is objected to because of the following informalities:

The first line of the specification does not include a sentence acknowledging applicant's claim for foreign priority. The examiner suggests amending the specification to include that information.

At page 13, line 25, "limits or thresholds" should be -- ~~limits or thresholds~~--.

At page 13, line 27, "limits (a) and (b)" should be -- thresholds (a) and (b)--.

At page 18, line 13, "S 37" should be --S 38--.

Appropriate correction is required.

Claim Suggestions

5. The previous claim suggestion is withdrawn in light of applicant's amendment.

Claim Objections

6. In claim 1, "shortage of excess" should be – shortage of or excess --.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Masuda et al. (US 4,685,139), Ohnishi (US 4,975,971), and Fujita (US 6,535,621).

Regarding **claim 1**, Masuda discloses a system and method for detection of printing defects ("inspecting device for print for detecting a defect occurred on the printed sheet" at col. 1, line 6) comprising:

determining a threshold of lowest stained density (figure 12A, "threshold signal") near a level of lowest printed density for inspection of stained parts ("threshold signal" corresponds to a print density that is in close proximity to the reference densities),

determining a threshold of highest blurred density (figure 12B, upper "threshold level") near a level of highest printed density for inspection of blurred parts ("threshold level" corresponds to a print density that is in close proximity to the reference densities),

reading multi valued data of reference of each color from a printed paper ("inspecting device for a print which is capable of accurately detecting the printing defects of yellow, magenta, cyan and black inks in a color print" at col. 2, line 38; figure 2, numeral 8) so that multi valued images of reference can be reproduced in a memory from the multi level data of reference ("the reference information is stored in the memory 15" at col. 8, line 54),

reading multi valued data of inspection of each of colors from a printed paper which is fed when inspecting ("In the inspection mode, the image information of the print pattern of the printed sheet which is sequentially printed is delivered" at col. 8, line 56) so that multi valued images of inspection can be reproduced in a memory from the multi valued data of inspection; and

comparing the multi level images of inspection with the multi level images of reference for inspection (figures 10A and 10B) of stained parts and blurred parts

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("printing defect such as dripped water or oil" at col. 9, line 36; "stains occur as a printing defect" at col. 9, line 40)

predetermining areas for decision of stained parts or blurred parts (figures 11 A and 11B, threshold lines); and

recognizing whether the multi valued images of inspection include portions disagreeing with the images of reference or not where the portions are positioned (figures 11A and 11B show the differential signals and how they correspond to the pixel locations, i.e. axis labeled "pixel") and deciding on stained or blurred parts when the portions have areas exceeding the areas for decision of stained parts or blurred parts (figure 8, error signals ER1 and ER2),

predetermining a limit of minus differential density (figure 11A, x-axis at voltage = 0, since pixel densities below the reference densities are candidates for blurs) independently of the limit of lowest stained density for inspection of shortage of printed density ("threshold value is set to the twice differential signal produced by taking the difference between the differential signal...and a signal displaced (delayed) by several pixels" at col. 10, line 9) at every pixel,

predetermining a limit of plus differential density (figure 11B, x-axis at voltage = 0) independently of the limit of highest blurred density for inspection of excess of printed density for inspection of blurred parts ("threshold value is set to the twice differential signal produced by taking the difference between the differential signal...and a signal displaced (delayed) by several pixels" at col. 10, line 9) at every pixel,

comparing the multi valued data of inspection with the multi data of reference at every pixel for inspection of shortage or excess of printed density for recognition of difference between the multi valued data of reference and the multi valued data of inspection (figures 11A, 11B, differential signals; a positive or negative voltage corresponds to a potential excess or potential shortage of density),

predetermining areas for decision of shortage or excess of printed density (any pixels with densities that do not correspond to the reference pixels' densities),

deciding on shortage or excess of printed density when the difference exceeds the limit of minus differential density or plus differential density by portions having areas which exceed the areas for decision of shortage or excess of printed density (figures 11A, 11B); and

executing the inspection and decision of stained parts and blurred parts and the inspection and decision of shortage and excess of printed density simultaneously (both processes are performed within figure 8, numeral 101 corresponding to figures 11A and 11B, which indicate presence of either defect concurrently).

Masuda does not teach converting the multi data of reference and inspection into two level data of reference and inspection, and predetermining the limit of lowest stained density and the limit of highest blurred density.

Ohnishi discloses a system and method in the same field of endeavor of print defect detection ("method and apparatus for detecting a defect on a surface of a to-be-checked sheet" at col. 1, line 16) where multi level data of reference and inspection are

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converted into two level data of reference and inspection (figure 1, numerals 7 and 13), and wherein the threshold levels of the inspected images are predetermined by an operator ("threshold levels are respectively set in binarization circuits 7 and 13 by the keying-in operation" at col. 4, line 62).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the processing circuit and error judging method to predetermine the thresholds of lowest stained density and highest blurred density of Masuda using the data conversion and thresholding taught by Ohnishi as described above, to overcome unreliability "when a large number of types of sheet materials are to be subjected to defect detection" (Ohnishi at col. 2, line 1).

The Masuda and Ohnishi combination does not disclose recognizing what areas the portions disagreeing have.

Fujita discloses a method of inspecting a printed paper on which images are printed repeatedly ("method for use in inspection of defects on a plain material roll (or web) based on an image data" at col. 1, line 12) comprising recognizing whether the monochrome images of inspection ("digitizing into binary values" at col. 10, line 29) include portions disagreeing ("defective feature" at col. 12, line 33) with the data of reference and what areas the portions have ("an area...of various defective pixels constituting one defect" at col. 12, line 40).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the area calculation of Fujita in the error judging circuit of the

Masuda and Ohnishi combination to “obtain an accurate defect information” (Fujita at col. 2, line 52) and thereby signal a printing alarm only when the flaws are significant.

Regarding **claims 2 and 13**, Masuda discloses a system and method comprising partitioning images of reference and images of inspection into parts to compare the images of inspection with the images of reference at every part (“entire print pattern by a line sensor such as a CCD... along scanning lines” at col. 3, line 52; figure 18, scanning lines).

Regarding **claim 4**, Masuda discloses a system and method further comprising alarm means (“alarm means such as a display unit, a marking unit or a rejecting unit” at col. 9, line 2, which is equivalent to applicant’s disclosed alarm) for generating an alarm of stained parts or blurred parts when finding stained parts or blurred parts (figure 7, numeral 13; “When the judging circuit judges the presence of the defect, an error signal is transferred to the CPU board 17, which thus operates alarm means” at col. 8, line 68).

Regarding **claim 5**, Masuda discloses a method further comprising the step of detecting positional variations of the printed paper at every page when the printed paper is fed (figure 19), to compensate for the positional variations in the images reproduced in the memory (“displacement of synchronization of the print patterns of a plurality of sheets of the next set is corrected” at col. 14, line 4).

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9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Masuda, Ohnishi, and Fujita as applied to claim 1 above, and further in view of Juang (US 5,999,636).

The Masuda, Ohnishi and Fujita combination teaches the elements of claim 1 as described in the 103 rejection above.

The combination does not teach generating an alarm of shortage or excess of printed density when finding out that shortage or excess of printed density.

Juang discloses a system and method comprising generating an alarm (figure 1, numeral 7) of shortage or excess of printed density when finding out that shortage or excess of printed density (figure 3; "flaw grade values are compared to the proper threshold values, which are user specified, to obtain the final accept or reject decision" at col. 3, line 58).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the error judging circuit of Masuda, Ohnishi and Fujita using the flaw grading taught by Juang as described above, to allow for some flexibility in detection of density defects.

Response to Arguments

10. Applicant's arguments with respect to claims 1, 2, 4, 5 and 8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katrina Fujita whose telephone number is (571) 270-1574. The examiner can normally be reached on M-Th 8-5:30pm, F 8-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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/Brian P. Werner/
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